# Atlantic hurricane numbers 'linked to industrial pollution'

**24 June 2013 - New research from the Met Office has raised the possibility that man-made aerosols, industrial pollution, may have had an impact on the number of Atlantic hurricanes.**

The paper, published in Nature Geoscience , suggests aerosols may have suppressed the number of Atlantic hurricanes over the 20th Century and even controlled the decade-to-decade changes in the number of hurricanes.

Researchers found that aerosols make clouds brighter, causing them to reflect more energy from the sun back into space. This has an impact on ocean temperatures and tropical circulation patterns, effectively making conditions less favourable for hurricanes.

This interaction between aerosols and clouds is a process that is now being included in some of the latest generation climate models.

Dr Nick Dunstone, a Met Office climate prediction scientist and lead author of the research, said: "Industrial emissions from America and Europe over the 20th Century have cooled the North Atlantic relative to other regions of the ocean. Our research suggests that this alters tropical atmosphere circulation - making it less likely that hurricanes will form.

"Since the introduction of the clean air-acts in the 1980s, concentrations of aerosols over the North Atlantic have reduced and model results suggest that this will have contributed to recent increases in hurricane numbers. On the other hand, the reduction in aerosols has been beneficial for human health and has been linked to the recovery of Sahel rains since the devastating drought in the 1980s."

It has long been known that North Atlantic hurricane activity has distinct long-timescale variability. Dr Doug Smith, a Met Office research fellow and co-author of the study, said: "We saw relatively quiet periods between 1900-20 and then again from 1970-80, and active periods between 1930-60 and since 1995. On average, active periods have 40% more hurricanes."

When the authors include changes in man-made aerosol emissions in the latest Met Office Hadley Centre model, which includes a comprehensive treatment of aerosol-cloud interactions, they can reproduce much of the decade-to-decade variability in Atlantic hurricane activity. This supports evidence of a link between the two.

Dr Ben Booth, a Met Office climate processes scientist and another co-author of the study says: "This study, together with work we published last year, suggests that there may be a greater role than previously thought for man-made influence on regional climate changes that have profound impacts on society."

This study motivates future international collaborative research because modelling the impact of aerosols is one of the largest uncertainties in climate science - particularly true for aerosol-cloud interactions now being incorporated in the latest generation of climate models.

Taken at face value, this study suggests the number of Atlantic hurricanes over the next couple of decades will depend on future aerosol emissions and how they interact with natural cycles in the North Atlantic.

## Contact information

Met Office Press Office: **+44 (0)1392 886655**

E-mail: Press Office

Met Office Customer Centre: **01392 885680**

If you're outside the UK: **+44 1392 885680**

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